

DOCUMENT RESUME

ED 308 707

FL 018 069

AUTHOR Miller, Ann M.
TITLE Morphological Idiosyncracies in Classical Arabic:
Evidence Favoring Lexical Representations over
Rules.
PUB DATE Oct 86
NOTE 14p.; In: Proceedings of the Annual Eastern States
Conference on Linguistics (3rd, Pittsburgh, PA,
October 10-11, 1986). The complete Proceedings are
available from the Dept. of Linguistics, Ohio State
University, Columbus.
PUB TYPE Reports - Evaluative/Feasibility (142) --
Speeches/Conference Papers (150)
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Consonants; Form Classes (Languages); Language
Patterns; Language Research; *Lexicology; *Linguistic
Theory; *Morphology (Languages); Uncommonly Taught
Languages
IDENTIFIERS Affixes; *Arabic (Classical)

ABSTRACT

A lexical representational analysis of Classical Arabic is proposed that captures a generalization that McCarthy's (1979, 1981) autosegmental analysis misses, namely that idiosyncratic characteristics of the derivational binyanim in Arabic are lexical, not morphological. This analysis captures that generalization by treating all the idiosyncracies uniformly in the lexicon by pre-linking affixes and non-final doubled consonants to their template slots. This approach will simplify the grammar of Arabic as proposed by McCarthy by reducing the number of its rules and conventions. A detailed argument is presented against McCarthy's handling of those words that have exceptional, idiosyncratic characteristics. The argument includes heavy emphasis on the following rules: (1) the Eighth Binyan Flop rule, and (2) the rule of Second, Fifth Binyanim Erasure. (DJD)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

BEST COPY AVAILABLE

ED308707

Morphological Idiosyncracies in Classical Arabic:
Evidence Favoring Lexical Representations Over Rules

by

Ann M. Miller

from

Proceedings of the Third

EASTERN STATES CONFERENCE ON LINGUISTICS

The University of Pittsburgh

Pittsburgh, Pennsylvania

October 10-11, 1986

Fred Marshall

Editor

The University of Pittsburgh

Ann Miller

Associate Editor

The Ohio State University

Zheng-sheng Zhang

Associate Editor

The Ohio State University

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☒ This document has been reproduced as
received from the person or organization
originating it

☐ Minor changes have been made to improve
reproduction quality

• Points of view or opinions stated in this docu-
ment do not necessarily represent official
OERI position or policy

"PERMISSION TO REPRODUCE THIS
MATERIAL IN MICROFICHE ONLY
HAS BEEN GRANTED BY

Joseph, B.D.

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

6968107

MORPHOLOGICAL IDIOSYNCRASIES IN CLASSICAL ARABIC:
EVIDENCE FAVORING LEXICAL REPRESENTATIONS OVER RULES*

Ann M. Miller

The Ohio State University

1.0. Introduction.

One of the central areas of investigation in morphology is the division of labor between lexical representations and morphological rules. Every theory must specify which phenomena are to be accounted for by each. This is not a straightforward division, especially when derivation is considered. Perennial questions include whether the lexicon contains multiple representations of derivationally-related words or whether it contains only a "basic form", with related words derived by morphological rules. This paper argues that, for Classical Arabic, derivationally-related words which have exceptional, idiosyncratic characteristics should be represented in the lexicon instead of being derived by morphological rules, as McCarthy (1979, 1981) does.

McCarthy's (1979, 1981) autosegmental analysis of Classical Arabic has come to serve as a model for many subsequent morphological analyses because of its simplicity and elegance. However, it has a rather inelegant aspect--its morphological rules. These are the Eighth Binyan Flop rule and the Second, Fifth Binyanim Erasure rule, shown below as (1b) and (2c). (A binyan is a verbal derivational class, and binyanim is its plural.) These rules are not as straightforward as they first appear to be. While they generate the surface forms of problematic structures adequately, they also obscure the processes they were devised to account for.

This paper argues that a treatment of these phenomena as exceptional aspects of lexical representation gets rid of the problems in McCarthy's analysis and also simplifies the grammar of Arabic. Creation of both a more straightforward and a simpler analysis thus provides an argument in favor of a lexical representation for these derived forms.

For consistency of representation, this paper follows McCarthy's (1979, 1981) practice of using the root consonants kth to represent any root in Arabic, since McCarthy's analysis is referred to throughout. This differs from the traditional practice of Arab grammarians, who use fxl as the root consonants when representing word patterns of root consonants and vowels.

2.1. The Eighth Binyan Flop Rule.

The Eighth Binyan Flop rule [(1b) below] accounts for the appearance of the reflexive morpheme t as the second consonant in the stem of Binyan VIII verbs. For example, the second consonant (the first t) in ktatah 'to write, he registered' is the

reflexive morpheme. This is in contrast to this morpheme's appearance as the first consonant in the stems of Binyanim V and VI verbs. For example, if the root ktb occurred in Binyan V, the word takattab would occur, with the first consonant being the reflexive morpheme. The meaning would be 'reflexive of Binyan II kattab', whose meaning is 'to cause to write'. The root ktb does occur in Binyan VI, producing the word takaatab, with the first consonant being the reflexive morpheme. This word is the reflexive of the Binyan III word kaatab 'to correspond', and it means 'to write to each other'.

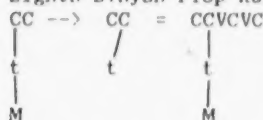
McCarthy begins deriving the surface forms of all three of these verbal binyanim by associating the reflexive morpheme t with the first C-slot in the templates of the binyanim. [(1a) below.] Then, in Binyan VIII, the Eighth Binyan Flop rule applies and reassociates the t with the second C in the template instead of the first. [(1b) below.] Finally, the feature matrices on the root tier associate with the vacant C-slots in the template, left to right, to complete the consonant derivation of the stems. [(1c) below.]

(1) MCCARTHY'S DERIVATION OF BINYAN VIII

- (a) Associate affixal t with the first C in the template.

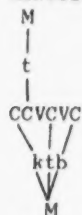


- (b) Eighth Binyan Flop Rule



[refl]

- (c) Associate root Cs with the template slots.



(ktatab)

(McCarthy 1981:390)

This three-step derivation for Binyan VIII verb stems represents a rather long and convoluted process when compared to its overall result of simply ensuring that, in Binyan VIII,

the morpheme *t* is associated with the second C-slot of the relevant template. If the *t* here appears on the surface in second position, why take three steps to put it there? Why not, instead, merely indicate that *t* is linked to that slot before any other aspects of Binyan VIII derivations take place? If McCarthy had compelling reasons for formulating the three steps in question, then the greater complexity of the longer analysis might be justified. If, however, there were no compelling grounds for constructing the analysis in a three-step manner, then the longer process is apparently only a "fix-up" derivation used in order to account for a quirk of the analysis that will not fit into the system anywhere else. Such a "fix-up" analysis is to be avoided because it obscures a simple, straightforward fact that could surely be indicated simply and straightforwardly if a few changes were made in the overall analysis. An examination of McCarthy's possible reasons for formulating a long derivation for Binyan VIII verbs reveals some answers to these questions.

McCarthy (1979, 1981) does not explain his decision to derive Binyan VIII by this circuitous process. He simply says that reassociation rules of the general type illustrated by the Eighth Binyan Flop rule are fairly common in tonal systems, and he cites Goldsmith (1976) as having shown this. However, as Fox (1982:132) argues, it is not clear that the morphological alternations of the consonantal segments in Arabic words should be treated in the same way as tonal alternations. Fox describes two ways, summarized below, in which the Arabic alternations are different from the tonal alternations which autosegmental phonology was developed to account for.

Fox first notes that tonal alternations can apply across word boundaries, thus appearing to be somewhat independent of the words they affect. He says that, in contrast, the Arabic alternations affect only a particular word within a particular paradigm, thus acting differently than tones and appearing to be much more dependent on the words they affect.

Second, Fox notes that tones and vowel and consonant harmony features can spread over a number of affixes and so need to be associated with a number of slots. The slots then all have the shared tone or features in common. He says that the consonantal segments of Arabic roots are different from this in that they do not spread across affixes and also do not have properties that they share with each other but not with affixes.

Thus, McCarthy's statement that processes which are like the Eighth Binyan Flop rule are common in tonal systems is not in itself justification for using the same type of rule for Arabic morphology. It must also be shown that the properties of Arabic are similar to those of tonal systems and can therefore be best handled by using the same type of rules. McCarthy does not show this to be true, and Fox shows two ways that it is not true. Therefore McCarthy cannot be said to have justified his use of this type of rule to place the morpheme *t* in its

proper position in Binyan VIII.

Furthermore, all the plausible conjectures that I can make regarding why McCarthy used this type of rule are not well supported. So they likewise fail to support his derivation of Binyan VIII verbs.

First, McCarthy may have wanted to treat the reflexive morpheme *t* identically in these three binyanim to the maximum extent possible, reasoning that a particular morpheme should act the same way wherever it occurs. But such reasoning is contradicted by the fact that the morpheme *t* reassociates only in Binyan VIII. That is, reflexive *t* does not act the same way in this binyan as it does in Binyanim V and VI. Therefore, nothing is gained by having it first associate with the first C in the template in order to justify the contention that it acts in Binyan VIII in the same way as it does in Binyanim V and VI.

Second, McCarthy may have wanted to treat affixes as prefixes wherever possible, since he has two conventions that together automatically place consonantal prefixes in the proper position (the first C-slot of the template). These are the convention of associating material on the affixal tier with the prosodic template prior to associating material on the root tier, and the convention of left-to-right association. These conventions allow McCarthy to get by without providing rules of association that stipulate which C-slot these affixes associate with, something that he has to do for binyanim which infix or suffix their affixes.

However, this sort of approach presumably treats prefixes as the unmarked type of affix in Arabic since it requires for prefixes no special rules in order for them to be associated with a prosodic template, while other types of affixes in the derivational binyanim do need special rules establishing their proper association with a template. Such an analysis of Arabic has several problems, though.

The most obvious problem is that, for the 15 verbal categories which McCarthy treats, the number which have infixes (four--Binyanim XII, XIII, XIV, and XV) nearly equals the number which have prefixes (five, not including Binyan VIII--Binyanim IV, V, VI, VII, and X). (The relevant affixes are the four prefixes *ʔ-*, *t-*, *n-*, and *st-*, the two infixes *-w-* and *-n-*, the suffix *-y*, and the infix + suffix combination *-n...-y*). Thus, it is not at all clear that the prefixes should be treated as the unmarked type of affix for these verbal categories of Arabic.

A larger problem--not discernible from McCarthy's analysis--is that there are four and a half times as many suffixes (namely, 18) as prefixes (only 4) used to indicate the rest of the morphosyntactic features of Arabic verbs (tense, mood, person, gender, and number). This is shown in Table 1 below.

Table 1: Prefixes and Suffixes of Classical Arabic Verbs
(cf. Wright 1974 I:55-71, 29B-304)

Tense:	Perfect		Imperfect					
	Mood:		Indica-		Subjunc-		Jussive	
			tive		tive		imper-	
							ative	
Prefix/ Suffix:	P	S	P	S	P	S	P	S
3MS	-a		yV-	-u	yV-	-a	yV-	
FS	-at		tV-	-u	tV-	-a	tV-	
2MS	-ta		tV-	-u	tV-	-a	tV-	(V-)
FS	-ti		tV-	-iina	tV-	-ii	tV-	-ii (V-)-ii
1 S	-tu		ʔV-	-u	ʔV-	-a	ʔV-	
3MD	-aa		yV-	-aani	yV-	-aa	yV-	-aa
FD	-ataa		tV-	-aani	tV-	-aa	tV-	-aa
2 D	-tumaa		tV-	-aani	tV-	-aa	tV-	-aa (V-)-aa
3MP	-uu		yV-	-uuna	yV-	-uu	yV-	-uu
FP	-na		yV-	-na	yV-	-na	yV-	-na
2MP	-tum		tV-	-uuna	tV-	-uu	tV-	-uu (V-)-uu
FP	-tunna		tV-	-na	tV-	-na	tV-	-na (V-)-na
1 P	-naa		nV-	-u	nV-	-a	nV-	

A blank in this table indicates that no prefix or suffix occurs for that category. The number of 18 suffixes and 4 prefixes is determined from this table by counting the number of different segmental combinations of each, disregarding the fact that the same morphemic form may have several different functions (e.g. *-a* is counted as one suffix, even though it functions to indicate '3MS PERFECT', as well as 'SUBJUNCTIVE' for 3MS, 3FS, 2MS, 1S, and 1P). The V in the prefixes may be either *a* or *u*, determined by the binyan number and whether the verb is active or passive. This vowel is usually treated in conjunction with the vowels in the stem (cf. Wright 1974 I:55-71; McCarthy 1979:281-295), and so it is not considered here in conjunction with determining the number of prefixes in Arabic. Finally, the parentheses in Table 1 show that the vowel is only sometimes prefixed in the imperative mood. Here the vowel is considered to be prosthetic, and it is used when the stem begins with CC because Arabic prohibits #CC.

It is unclear how many verbal prefixes and suffixes McCarthy (1979:295-303) posits. He first lists the prefixes and suffixes generally as shown in Table 1 (although for the imperfect tense he does not list single final vowels as suffixes, and he leaves off the final *na* from *-iina* and *-uuna* and the final *ni* from *-aani* without explaining these omissions). Then he outlines how these prefixes and suffixes would be derived under his prosodic template theory. His theory posits one prefix template and one suffix template with rules that specify how the appropriate melodies are associated with the templates, as well as 5 consonantal melodies (*y*, *ʔ*, *n*, *t*, *m*) and 3 vocalic melodies (*a*, *i*, *u*) which can all be associated to

either the prefix or the suffix template whenever the conditions in the templates and rules are met. If his first listing is taken as the number of prefixes and suffixes that he considers Arabic to have, then his analysis also shows--like the traditional analysis represented in Table 1--that Arabic has many more suffixes than prefixes in its verbal system. If his templates and melodies are taken as the number of prefixes and suffixes that he considers Arabic to have, then the exact number is unclear, but it is clear that the suffix template has many more of the melodies attach to it than the prefix template does. Therefore, whichever way the counting is done, McCarthy (1979) also shows that Arabic has many more suffixal than prefixal elements, even though he does not account for this situation in his theory.

Furthermore, the Arabic nominal system is also overwhelmingly suffixing, with case, indefiniteness, and regular plural formation all being marked by suffixes. Only irregular ("broken") plurals and verbal nouns ("masdars") are marked differently--by stem changes and, sometimes, by prefixation.

These facts suggest that if any type of affix in Arabic should be treated as unmarked, it is more reasonable for suffixes--rather than prefixes--to be. Therefore, if McCarthy's reason for analyzing the morpheme *t* in Binyan VIII as a prefix was that his analysis elsewhere treats prefixes in Arabic as unmarked, a consideration of the numbers just cited shows that such reasoning is not valid. Furthermore, McCarthy's treatment of verb stem affixes in Arabic obscures the real situation that suffixes are by far more common in this language (and, according to Greenberg 1966:92, in the languages of the world in general).

On all these grounds, then, McCarthy's use of the Eighth Binyan Flop rule in the morphological derivation of Classical Arabic Binyan VIII seems flawed. Therefore it is plausible to consider an approach in which the reflexive morpheme *t* not only ends up but also starts out as an infix in this verbal category. Such an analysis is presented below following a discussion of McCarthy's treatment of another problematic situation within the Arabic verbal system--the Second, Fifth Binyanim Erasure rule. [(2c) below.]

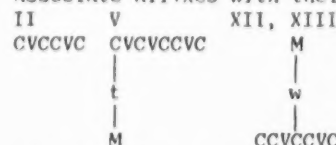
2.2. The Second, Fifth Binyanim Erasure Rule.

Binyanim II and V show gemination of the middle consonant of their roots. For example, the Binyan II verb with the root *kṭb* is *kattab* 'to cause to write', and the Binyan V verb (if it existed with the root *kṭb*) would be *ṭakattab* 'reflexive of Binyan II'. In order to allow this gemination, McCarthy formulates the rule of Second, Fifth Binyanim Erasure. He later extends its application to allow for the double occurrence of the middle root consonant in Binyan XII (producing *ktawṭab*) and for the gemination of the infixal consonant in Binyan XIII (producing *ktawwab*).

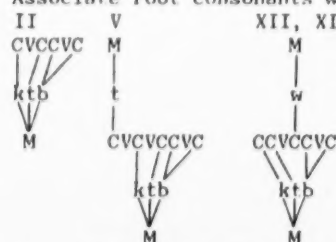
In these four verbal binyanim there is, first, association of affixes with their respective prosodic templates. [(2a) below.] This is followed by left-to-right association of the root elements with the templates and automatic spreading of the final root element to the final C-slot of the template. [(2b) below.] This, however, yields structures which would be incorrect as surface forms because they show gemination of their final root consonant instead of their medial one. In order to avoid the generation of such ungrammatical forms, the Second, Fifth Binyanim Erasure rule then applies, erasing the association of the final root consonant with the penultimate C-slot of the prosodic template and leaving that slot unassociated. [(2c) below.] Following this, universal association conventions ensure that the first available root or affixal element to the left of the now-empty C-slot automatically reassociates with the empty C-slot. [(2d) below.] Since association lines may not cross, the root consonant which relinks in such cases is always the second one. For Binyanim II, V, and XII, it is thus *t* that spreads to the right. For Binyan XIII, it is the consonantal infix *-w-* that spreads.

(2) MCCARTHY'S DERIVATION OF BINYANIM II, V, XII, XIII

(a) Associate affixes with their templates.



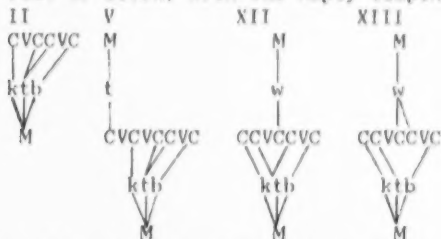
(b) Associate root consonants with template slots.



(c) Second, Fifth Binyanim Erasure Rule



- (d) Reassociate the nearest C on the left (either root or affix) with the empty template slot.



(kattab) (takattab) (ktawtab) (ktawwab)
(McCarthy 1981:391-394)

There is no doubt that this process of erasure followed by automatic reassociation works as a way to derive the Arabic verbs which have medial geminate consonants--and that this cannot be done by employing only the main convention assumed by McCarthy's approach: left-to-right association. But, just like the Eighth Binyan Flop rule as a way to place the reflexive affix *t* of Binyan VIII in second consonantal position, the rule of Second, Fifth Binyanim Erasure (along with the process of reassociation) is circuitous and unrevealing. An analysis in which one must first make an incorrect association, then undo it, and only then make the correct association obscures the straightforward fact that a medial consonant in Binyanim II, V, XII, and XIII is simply doubled. Again, as with the Eighth Binyan Flop rule, if McCarthy had compelling reasons for taking three steps to derive the surface forms, then the long derivations might be justified. However, if the only justification is that such a rule is a way to leave the rest of the analysis intact and still make it work for the binyanim under consideration, then it must be termed *ad hoc*. In such a case, it would surely be more revealing to derive the Arabic verbs which have medial geminate consonants in a more straightforward manner.

In fact, McCarthy does not provide any reasons for using either a three-step process or an erasure rule in order to derive verbs with medial geminate consonants; he simply states that this is how his analysis derives such verbs. It is possible that he considered the erasure process to be just a specific instance of a general type of rule that often occurs in tonal systems, as he did with the flop rule. But it was shown above that it is not at all clear that morphological processes which are segmental in nature should be treated like tonal ones since there are several major ways in which the two sorts of phenomena do not act alike. Thus, if this was McCarthy's reasoning, it cannot be considered valid. So it appears that the Second, Fifth Binyanim Erasure rule is also simply a "fix-up" rule, formulated to make verbal binyanim which have medial geminate consonants fit in with the rest of McCarthy's analysis of Arabic.

As with the flop rule and the binyanim it was applied to, there probably also exists a more straightforward and revealing way than the erasure rule to derive the binyanim which have medial geminate consonants. An alternative treatment for all the binyanim is considered next. It can be called a "lexical representational analysis."

3.0. A Lexical Representational Analysis.

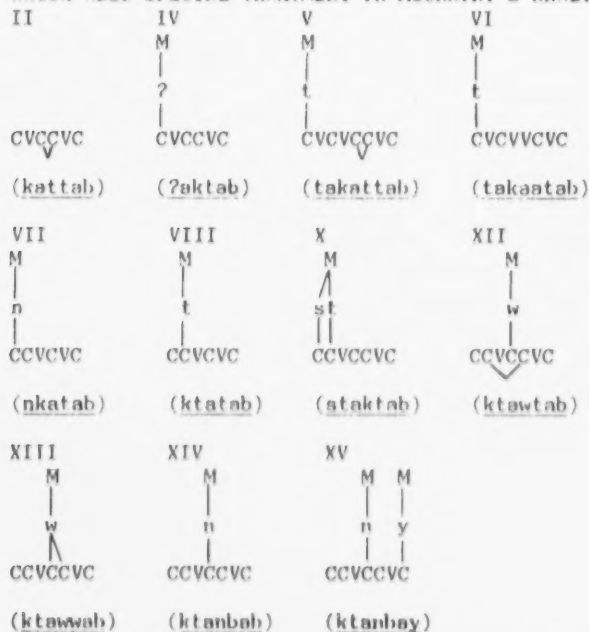
Upon closer consideration, it is clear that the morphological idiosyncrasies of Binyanim II, V, VIII, XII, and XIII have something in common which is not indicated by McCarthy's analysis--these idiosyncrasies are lexical. That is, the occurrence of a particular affix always in a particular position, and the doubling of a particular consonant--whether part of the root or an affix--are characteristics of the lexical items themselves. Since McCarthy treats the template of each binyan as a morpheme, and since the idiosyncratic aspects of each binyan are integral characteristics of that binyan--occurring in a fixed position in the template regardless of the root used with it, then these aspects are characteristics of the morpheme. This means that 11 out of the 15 binyanim which McCarthy treats have such lexical characteristics--10 with particular affixes attached at particular places (Binyanim IV, V, VI, VII, VIII, X, XII, XIII, XIV, and XV), and 4 with particular consonants doubled (Binyanim II, V, XII, and XIII).

The generalization that these 11 binyanim all have lexical idiosyncrasies can be captured if their idiosyncrasies are treated in the same way--something which McCarthy's analysis does not do. McCarthy's analysis treats these binyanim in four different ways: binyanim with prefixes in one way (IV, V, VI, VII, and X), binyanim with infixes or suffixes in one way (XII, XIII, XIV, and XV), binyanim with doubled consonants in one way (II, V, XII, and XIII), and the binyan with the reflexive morpheme in second consonantal position in a different way (VIII).

These idiosyncrasies can be treated in the same way by indicating them with the listing of the templates in the lexicon. Each affix could be attached to the appropriate C-slot of the template, and doubled consonants could be indicated by linking the appropriate C-slots together, as shown in (3) below. McCarthy himself states that the grammar must specify the affix(es) which accompany the template for each binyan, so it does not appear to be any more complicated or costly to also specify the place where an affix attaches to its template as part of its listing in the lexicon. Also, a convention suggested by Marantz (1982:451-452n.13) for handling long vowels in Tagalog could be used to generate the doubled consonants in Arabic. This convention links two vowel slots together in the template so that one vowel automatically associates with the link to the two slots, and a long vowel is derived on the surface. For Arabic, the C-slots which are doubled could be

linked together in the appropriate templates so that one consonant associates with the link to the two slots, and a doubled consonant would be derived on the surface. This would provide a straightforward way to handle doubling of consonants in Binyanim II, V, XII, and XIII. Also, it would entail the prediction that linked slots should not be separable in speech errors or language games, and there is some evidence that this prediction is borne out. McCarthy (1981:379) cites examples from a language game in the Bedouin Hijazi dialect of Arabic in which "the consonants of the root may be freely permuted into any order, though nonroot consonants and the canonical form of the pattern remain unchanged." In this game, for example, McCarthy reports that difaṣna 'we pushed' (root consonants *dfṣ*) can become daṣafna, fiḍaṣna, ṣaḍafna, faṣadna, and ṣafadna (the vowel quality changes are due to regular phonological effects of the neighboring consonants). Since this is only one game in one dialect, its evidence cannot be considered conclusive, but it does add support to the proposals made here. These proposals are schematized in (3) below.

(3) LEXICAL REPRESENTATIONAL ANALYSTS (THE 11 BINYANIM WHICH NEED SPECIAL TREATMENT IN MCCARTHY'S ANALYSIS)¹



If one adopts this sort of lexical representation, then no special morphological rules are needed. The Eighth Binyan Flop

rule and the Second, Fifth Binyanim Erasure rule could be eliminated, simplifying the grammar of Classical Arabic by two rules. Also, no special rules of association are needed for any of the affixes to specify where they attach to the templates. Only the convention of left-to-right association of the root tier with its template is needed to ensure proper placement of the affixes with respect to the root consonants. The grammar would thus be simpler by three more rules--one for each of the two infixes *-w-* and *-n-* and one for the suffix *-y*. Furthermore, since prefixes would also be associated with their templates in the lexicon, McCarthy's convention that affixes must associate with templates before roots do could be eliminated as well.²

Using links to ensure consonant doubling in the binyanim does have one potential drawback. This is that such a treatment would require some extra machinery for the handling of quadriliteral roots (=4 root consonants; e.g. *dhrj* in *dahraja* 'to roll'), since in these verbs there is no doubling of consonants. Rather, the presence of an "extra" root consonant is accommodated by linking every root consonant with a single C-slot in a template. However, since quadriliteral roots are relatively uncommon, the fact that they require special treatment in Binyanim II and V (they do not occur in Binyanim XII and XIII) can actually be seen as fitting in well with that fact. Moreover, quadriliteral roots require special treatment in McCarthy's account, too, since McCarthy must prevent them from occurring in Binyanim I, III, IV, VI-X, XII, XIII, and XV. He does this by notating the four trilateral binyanim that can take quadriliteral roots (II, V, XI, and XIV)--and them only--as being able to do so, thereby treating quadriliteral roots differently from the rest of the roots in four of the binyanim.'

So it does not seem to be a serious disadvantage of the linking approach to doubling that it requires special treatment for quadriliteral roots in Binyanim II and V. Such treatment could be handled by formulating a special rule to remove the link from the templates for these binyanim. This would be a type of erasure rule very much like McCarthy's, but it would not need to follow the application of the left-to-right association convention. Since this mechanism would reflect the greater complexity of quadriliteral roots, it does not appear to be an unacceptable complication of an analysis that achieves doubling of consonants in Arabic verbs through the convention of linking C-slots in the template.

In conclusion, the lexical representational analysis of Arabic proposed here captures a generalization which McCarthy's analysis misses--that idiosyncratic characteristics of the derivational binyanim in Arabic are lexical. This analysis captures that generalization by treating all the idiosyncrasies uniformly in the lexicon by pre-linking affixes and non-final doubled consonants to their template slots. This approach also simplifies the grammar of Arabic as proposed by McCarthy by reducing the number of its rules and conventions.

FOOTNOTES

* I would like to thank Arnold Zwicky and Rich Janda for helpful comments on earlier versions of this paper.

1. Here, since I follow McCarthy's practice of using *ktb* to represent the placement of the root consonants in the derivational patterns, the words listed below the CV templates are representational patterns only and do not necessarily indicate actual words. All of these patterns occur with some roots in Arabic; some of them occur with *ktb*, and some do not.

2. This convention is actually more complicated than McCarthy portrays it, anyway; in fact, it is rather problematic. This is because the convention not only must allow the consonantal affixes for the various binyanim to associate first but also must prevent them from associating with more than one C-slot. Otherwise, as a result of automatic spreading there would be no C-slots for root consonants to associate with after the affixes associated first, unless ad hoc erasure rules were formulated.

REFERENCES

- Fox, Samuel Ethan. 1982. Autosegmental Phonology and Semitic. Papers from the Eighteenth Regional Meeting Chicago Linguistic Society. Chicago: Chicago Linguistic Society. 131-139.
- Goldsmith, John. 1976. Autosegmental Phonology. M.I.T. Ph.D. Dissertation. Cambridge, Mass.
- Greenberg, Joseph H. 1966. Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements. In Joseph H. Greenberg (ed.). *Universals of Language*. Second Edition. Cambridge, Mass.: The M.I.T. Press. 73-113.
- Marantz, Alec. 1982. Re Reduplication. *Linguistic Inquiry* 13.3. 435-482.
- McCarthy, John J. 1979. Formal Problems in Semitic Phonology and Morphology. M.I.T. Ph.D. Dissertation. Cambridge, Mass.
- McCarthy, John J. 1981. A Prosodic Theory of Nonconcatenative Morphology. *Linguistic Inquiry* 12.3. 373-418.
- Wright, W. 1974. *A Grammar of the Arabic Language*. Beirut: Librairie du Liban.